

Hawaii's Innovation & Technology Story

Investing in Aerospace

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Hawaii's 21st Century Challenge it's not about R & R ...

- 92% Dependant on imported oil
- 75% Dependant on imported food
- Growing bifurcation between rich and poor
- Challenge of affordable housing
- Port and airport capacity
- Integrated transportation
- Changing world tourism markets
- High-value wage job creation
- Environmental and cultural preservation

... it's about R & D



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Hawaii isn't right for everyone

- Hawaii is not an industrial or manufacturing Center.
- Hawaii has limited mid and late stage investment capital.
- Hawaii presents permitting and approval challenges.
- Hawaii's tech workforce is limited but growing to meet demand.
- Hawaii is expensive for food, energy, and housing.
- Hawaii isn't Silicon Valley or San Diego.



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But it works for Technology

- \$3 billion dollars, or 5% direct contribution to the state's economy.
- 31,106 jobs, or 3.6% of the state's employment.
- Tech employees generate 5.4% of Hawaii's total worker earnings (\$2.1 billion).
- 1,964 companies, approximately 5% of all establishments.
- \$69,000 average annual earnings per tech worker — 50% more than the average worker.
- Technology workers in Hawaii earn about 77% of the mainland average for technology employees.



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And the Trend Continues Upward

- Defense and ICT together comprise more than 50% of tech employment.
- 4,784 science and technology jobs are located on the Neighbor Islands, or 17% of total science and technology employment
- 4,158 net new jobs were created between 2002 and 2007 within Hawaii's public and private technology sectors.
- 3.3% - the annual growth rate of Hawaii's private technology companies, outpacing the state's overall 2.5% economic growth (between 2002 and 2007).
- Hawaii's tech sector is catching up to the mainland, with 3.3% annual growth compared with 1.8% on the mainland (between 2002 and 2007).
- **Employment projections suggest that the technology sector is likely to grow nearly 50 percent faster than the rest of Hawaii's economy over the next decade.**



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Hawaii, 2007 data, 2002-2007
trends.



Focus on Key Sectors

- Defense / Dual Use / Aerospace
- Astronomy / Optics / Space Sciences
- Energy & Transportation
- Life Sciences / Biotech
- Film & Digital Media
- Ocean & Marine Sciences
- Information Technology & Telecommunication
- Diversified Agriculture / BioAg
- Environmental / Engineering



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Innovation & Technology Market Segments

Market Segment	Growth rate (2002-2007 emp.)	Average Earnings (2007)
Agricultural Biotech	6.4%	\$53,866
Astronomy	3.6%	\$70,951
Biotech/Life Sciences	2.3%	\$54,532
Defense/Aerospace	4.1%	\$76,697
Energy	8.4%	\$58,498
Environmental	4.0%	\$66,971
Film/Digital Media	0.2%	\$73,335
ICT	2.5%	\$75,056
Ocean Sciences	5.2%	\$53,959
Engineering	3.8%	\$80,799
Overall Tech	3.3%	\$63,623
Overall HI Economy	2.5%	\$45,963

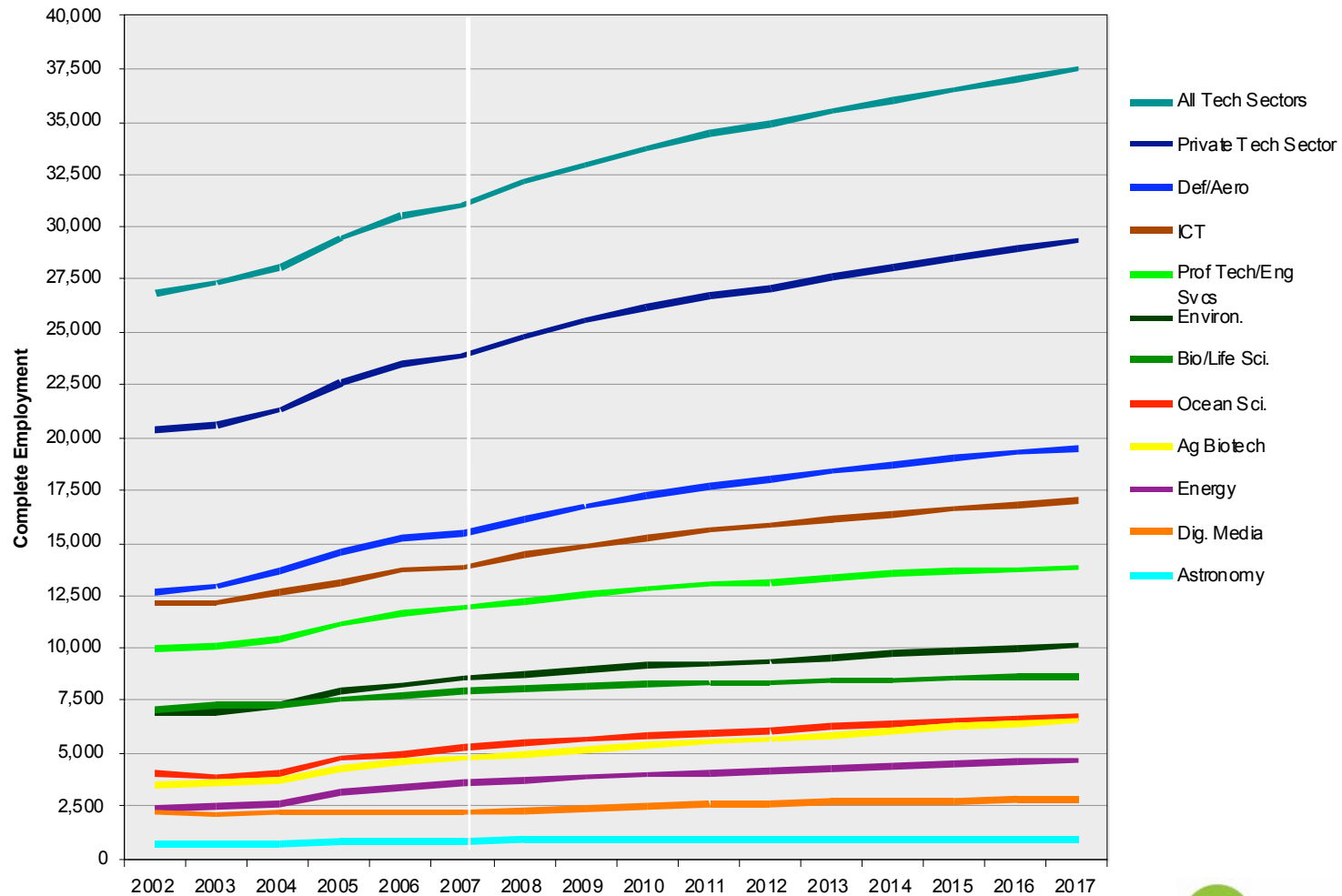


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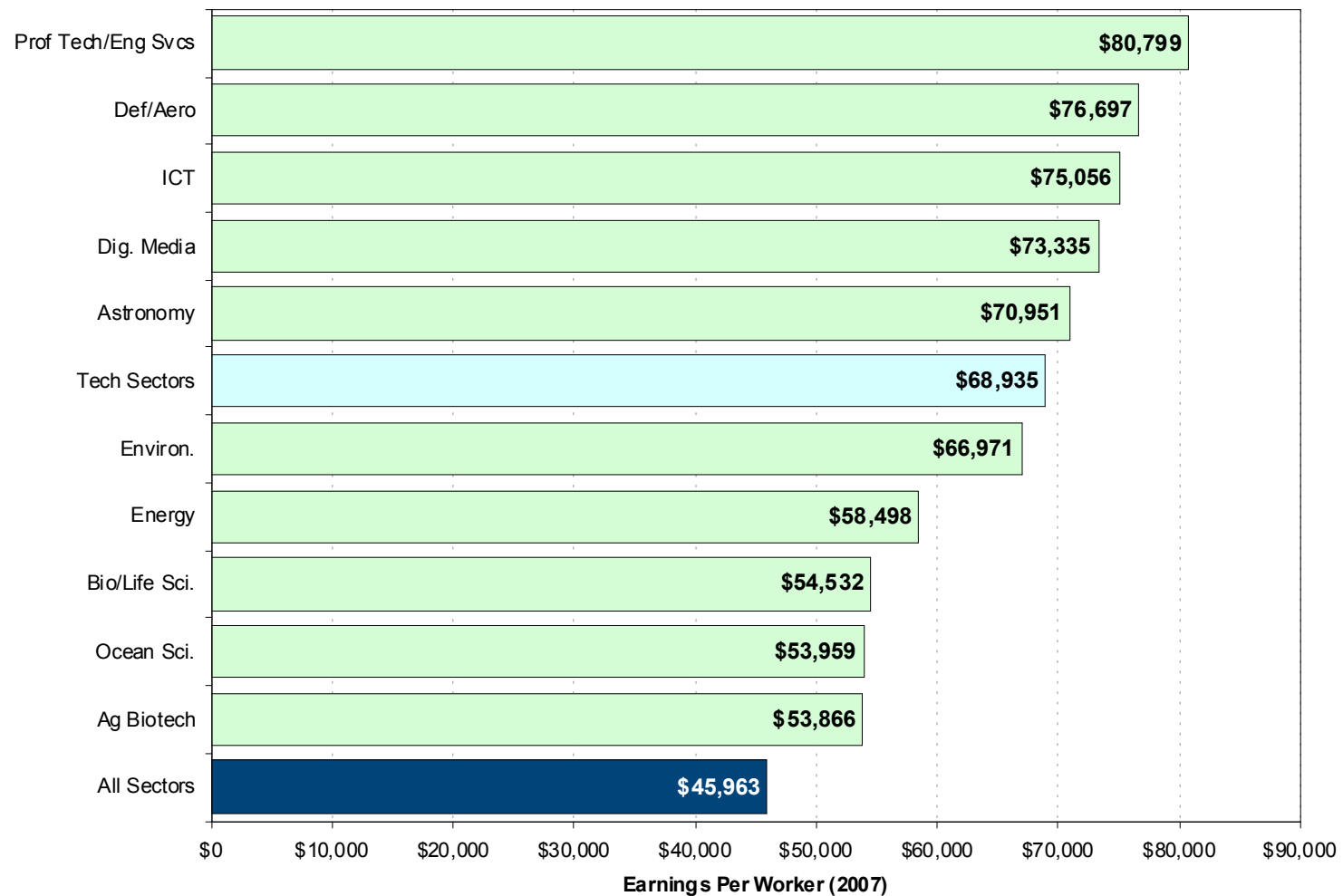
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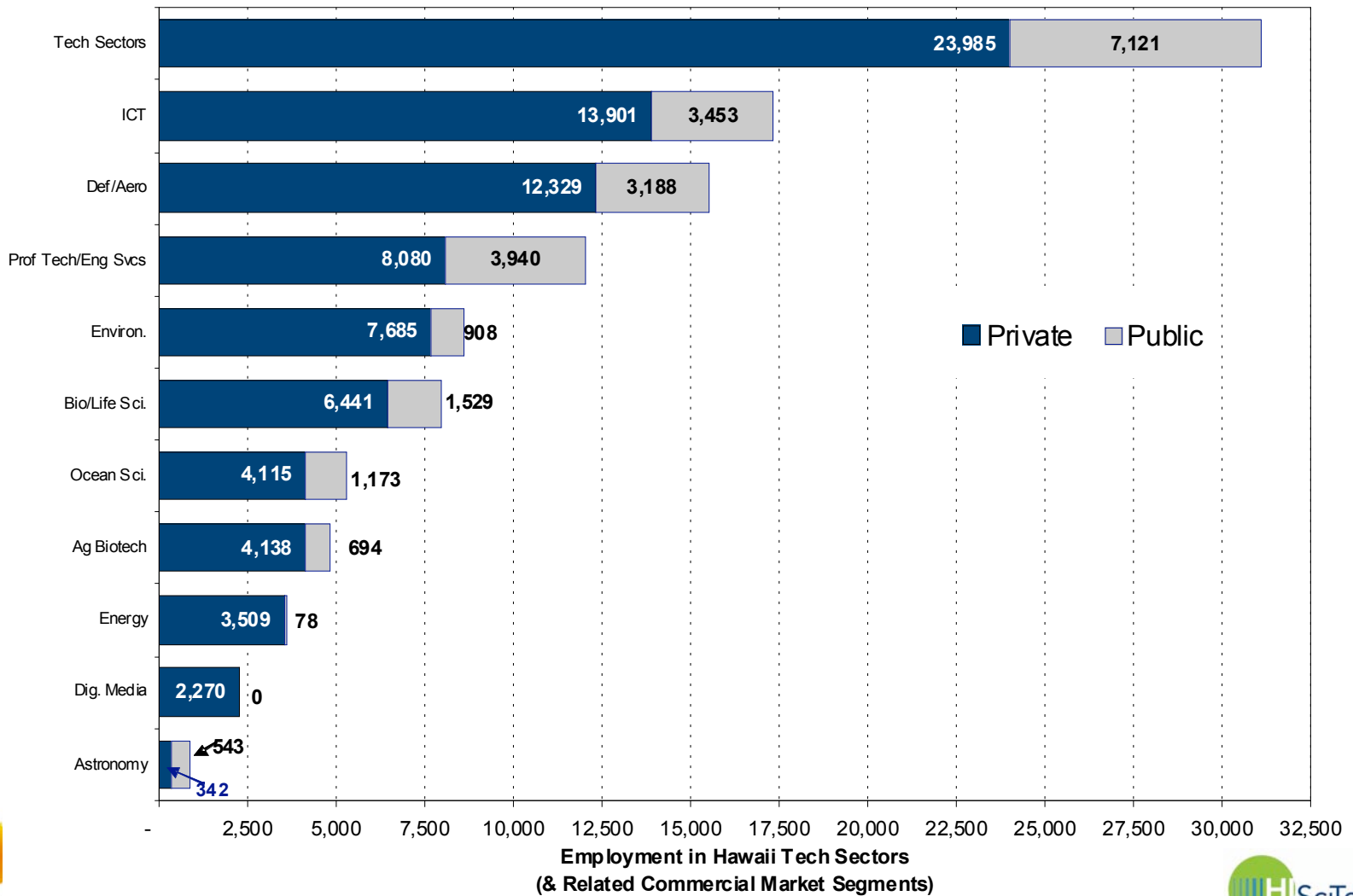
Trends in Hawaii Tech Employment by Commercial Market Segment, 2002-2017



Annual Earnings by Commercial Market Segment



Hawaii Tech Employment by Commercial Market Segment, Estimated 2007

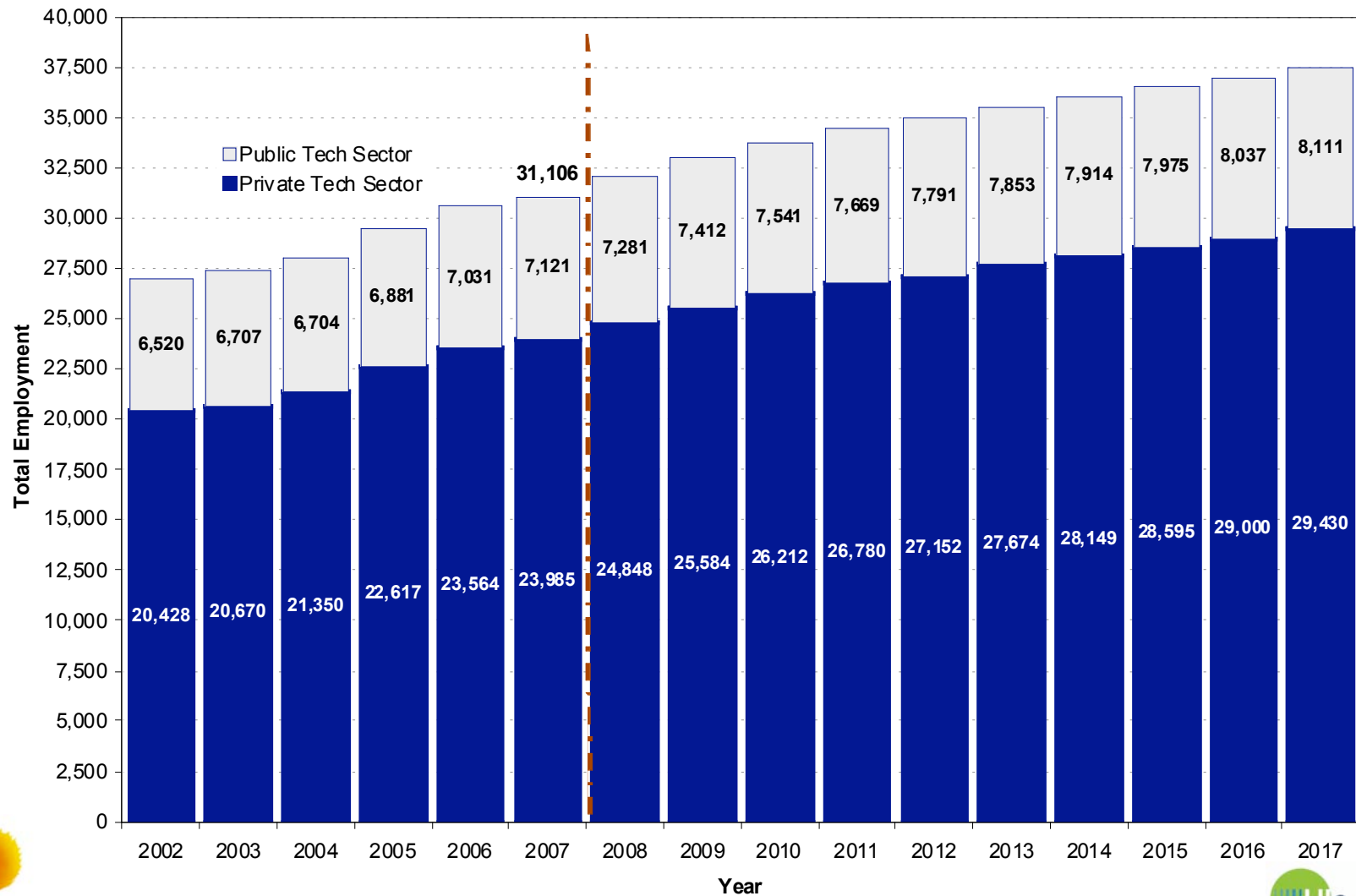


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Employment Trends in the Hawaii Technology Sector



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So What's Driving This?

- Innovation Industries
- Science Funded Research
- Defense R&D / T&E
- Strategic Assets Plus Areas of Expertise and Competency
- The Expanding Role of Hawaii in the Asia Pacific Region – The Pacific Century
- Pacific Command – The Global Mission



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"Research is the art of seeing what everyone else has seen,

and doing what no-one else has done" Anonymous

The Pearls of Paradise



**Pacific Missile
Range Facility**



**Hawaii Institute
of Marine Biology**



**Maui Space
Surveillance Complex**



**The
Kapolei Teleport**



**"Honolulu"
Transgenic Mice**



**The IBM Power3
Supercomputer**



**Mauna Kea
Observatories**



**Pisces V
Underwater Vehicle**

Hawaii's Assets



Maui Space Surveillance System



Maui High Performance Computing



Kauai Pacific Missile Range Facility



Pearl Harbor Naval Shipyard Oahu



Tripler Army Medical Center



Hawaii National Energy Institute



Hawaii Center for Advanced Transportation Technologies



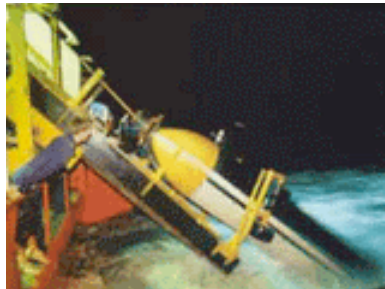
**Pacific
International
Center for High-
technology
Research**



Hawaii Facilities & Programs



Kaka'ako Campus/Park



**Mapping Research Group,
UH, SOEST**



**Airborne Hyperspectral
Imaging Group, UH, SOEST**



**Hawaii Undersea Lab,
UH, SOEST**



HCAC, UH

OTHER Facilities/Assets: Force Protection Laboratory,
HI Air/Sea/Space Consortium, EPSCoR, ARC, UARC

We work well with other world class research organizations.



The major companies are here.



BAE SYSTEMS

Raytheon

Customer Success Is Our Mission

NORTHROP GRUMMAN



GENERAL DYNAMICS

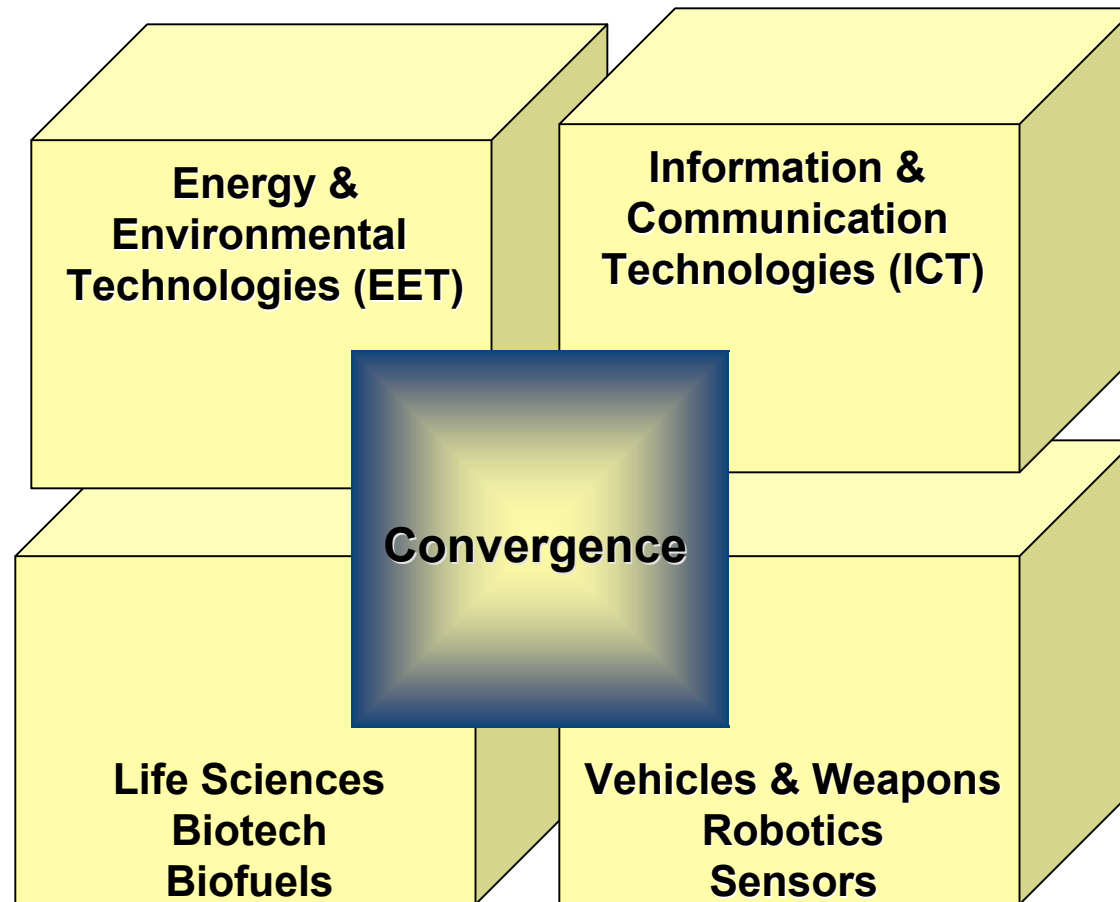


The Local Companies are Growing.



**Over 280 Local Companies Work in
Defense / Aerospace Related Activities**

Hawaii Defense, Innovation & Technology Platforms



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Energy & Environmental Technologies

Adv Tech for Energy Supply & Efficiency
Environmental Technologies

Information & Communication Technologies

Communication Technologies
Computational & Information Sciences
Detection/Surveillance Systems
Digital Media
Space Situational Awareness Systems

Life Science Technologies

Medical & Biotech Science & Technology

Vehicles & Weapon Technologies

Unmanned Aerial Vehicles, Sea vehicles
Missile Defense Technologies

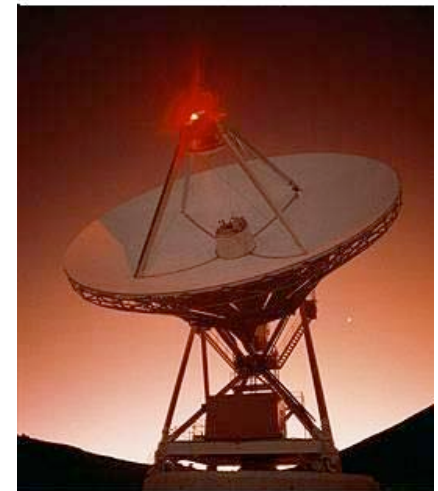


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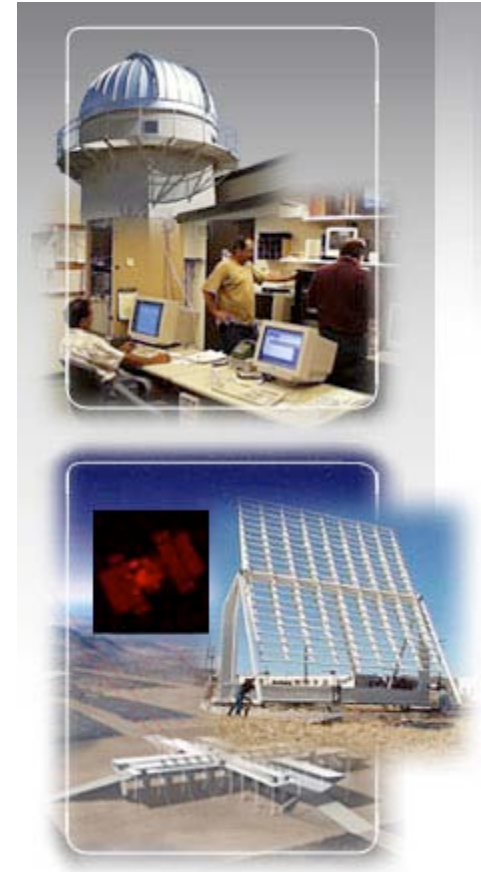
Current Strategies

- Expansion of existing businesses.
- Retention of Innovation Industries.
- Targeted Business Recruitment.
- Work Towards Economic Sustainability in Energy, Food, and Feedstock.
- Streamline Permitting Processes.
- Workforce Development / Education Alignment with Business.
- Improve Late Stage Capital Formation.



What's Still Needed?

- Continued support from the State
- Sustainable funding for joint development programs – PISCES
- Commitment to proceed with Spaceport Licensing
- Expansion of STEM education and workforce alignment



Thank You!



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